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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,057	10/30/2003	Hans-Joachim Barth	02 P 50297 US	7762

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EXAMINER

PRENTY, MARK V

ART UNIT	PAPER NUMBER
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2822

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/698,057

Applicant(s)

BARTH ET AL.

Examiner

MARK V PRENTY

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 10-20, 23-26, 28 and 29 is/are rejected.
- 7) ☒ Claim(s) 4-9, 21, 22 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

This Office Action is in response to the papers filed on October 30, 2003.

Claims 1-3, 10-20, 23-26, 28 and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Hoinkis et al. (United States Patent Application Publication 2004/0227214 – hereafter Hoinkis).

With respect to independent claim 1, Hoinkis discloses a semiconductor integrated circuit apparatus (see the entire reference, including the Fig. 2a disclosure), comprising: a plurality of electrically conductive vias 5 for electrically connecting metal layers 3 and 4 of said apparatus; a first dielectric layer 9/11 overlying said vias; and a stress relief layer 8' that is more flexible than said first dielectric layer, said stress relief layer overlying said vias and interposed between said vias and said first dielectric layer.

Claim 1 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Hoinkis.

With respect to dependent claim 2, Hoinkis's first dielectric layer 9/11 includes a layer 9 of a first dielectric material and a layer 11 of a second dielectric material overlying said layer of first dielectric material.

Claim 2 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Hoinkis.

With respect to dependent claim 3, Hoinkis's first dielectric material is an oxide and said second dielectric material is a nitride material.

Claim 3 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Hoinkis.

With respect to dependent claim 10-12, Hoinkis's stress relief layer 8' includes a further dielectric layer of silicon low-k (SiLK) material.

Claims 10-12 are thus rejected under 35 U.S.C. 102(e) as being anticipated by Hoinkis.

With respect to dependent claim 13, Hoinkis's first dielectric layer 9/11 includes one of an oxide layer and a nitride layer.

Claim 13 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Hoinkis.

With respect to dependent claim 14, a thickness of Hoinkis's stress relief layer 8' is approximately half of a thickness of said first dielectric layer 9/11 (see Fig. 3's 4 kÅ or 5 kÅ embodiments, for example).

Claim 14 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Hoinkis.

With respect to dependent claim 15, a thickness of Hoinkis's stress relief layer 8' is less than half of a thickness of said first dielectric layer 9/11 (see Fig. 3's 1 kÅ or 2 kÅ embodiments, for example).

Claim 15 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Hoinkis.

With respect to dependent claim 16, Hoinkis's apparatus includes a further dielectric layer 7' underlying said stress relief layer 8', wherein said further dielectric layer is more flexible than said first dielectric layer 9/11, and wherein said vias 5 are embedded in said further dielectric layer.

Claim 16 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Hoinkis.

With respect to dependent claim 17, Hoinkis's vias 5 are copper vias (i.e., the vias-filling metal layer 4 comprises copper - see paragraph [0007]).

Claim 17 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Hoinkis.

With respect to dependent claim 18, Hoinkis's apparatus includes an first cap layer overlying said vias and interposed between said vias 5 and said stress-relief layer 8' (i.e., the thin, unnumbered layer between SiLK layers 7' and 8').

Claim 18 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Hoinkis.

With respect to dependent claim 19, Hoinkis's apparatus includes a further cap layer overlying said stress-relief layer 8' and interposed between said stress relief layer and said first dielectric layer 9/11 (i.e., the thin, unnumbered layer therebetween).

Claim 19 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Hoinkis.

With respect to dependent claim 20, Hoinkis's first dielectric layer 9/11 includes a layer 9 of a first dielectric material and a layer 11 of a second dielectric material overlying said layer of first dielectric material.

Claim 20 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Hoinkis.

With respect to independent claim 23, Hoinkis discloses a method of making a semiconductor integrated circuit (see the entire reference, including the Fig. 2a disclosure), comprising: providing a plurality of electrically conductive vias 5 for electrically connecting metal layers 3 and 4 of the integrated circuit; providing in overlying relationship relative to the vias a first dielectric layer 9/11; and providing, in overlying relationship relative to the vias and interposed between the first dielectric layer and the vias, a stress relief layer 8' that is more flexible than the first dielectric layer.

Claim 23 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Hoinkis.

With respect to dependent claim 24, Hoinkis's step of providing a stress relief layer includes providing the stress relief layer 8' with a thickness that is approximately half of a thickness of the first dielectric layer 9/11 (see Fig. 3's 4 kÅ or 5 kÅ embodiments, for example).

Claim 24 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Hoinkis.

With respect to dependent claim 25, Hoinkis's step of providing a stress relief layer includes providing the stress relief layer 8' with a thickness that is less than half of a thickness of the first dielectric layer 9/11 (see Fig. 3's 1 kÅ or 2 kÅ embodiments, for example).

Claim 25 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Hoinkis.

With respect to dependent claim 26, Hoinkis's step of providing a first dielectric layer 9/11 includes providing a layer 11 of a first dielectric material in overlying relationship relative to a layer 9 of a second dielectric material.

Claim 26 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Hoinkis.

With respect to dependent claim 28 and 29, Hoinkis's step of providing a stress relief layer 8' includes providing a further dielectric layer of silicon low-k (SiLK) material.

Claims 28 and 29 are thus rejected under 35 U.S.C. 102(e) as being anticipated by Hoinkis.

Claims 4-9, 21, 22 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable over the prior art of record if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record does not disclose or suggest the allowable claims taken as a whole, including the stress-relief layer.

Art Unit: 2822

Registered practitioners can telephone the examiner at (571) 272-1843. Any voicemail message left for the examiner must include the name and registration number of the registered practitioner calling, and the Application/Control (Serial) Number. Technology Center 2800's general telephone number is (571) 272-2800.

Mark Prenty
Mark V. Prenty
Primary Examiner